Beijer ELECTRONICS

DT150

Installation Manual

English

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Foreword

The DT150 industrial monitor is a TFT-LCD touch screen monitor, designed to be mounted in a cabinet and connected to an industrial PC.

The monitor is optimized for a maximum resolution of 1024 x 768 pixels when the full display area of the module is used.

This manual explains how to install the monitor.
Please see *www.hmi.beijerelectronics.com* for further information.

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Read the entire installation manual prior to installing and using this equipment.
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Because the equipment has a wide range of applications, users must acquire the appropriate knowledge to use the equipment properly in their specific applications.
Persons responsible for the application and the equipment must themselves ensure that each application is in compliance with all relevant requirements, standards and legislation in respect to configuration and safety.
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1 Safety Precautions

Both the installer, owner, and operator of the monitor must read and understand this installation manual.

1.1 General

- Only qualified personnel may install or operate the monitor.
- The monitor must be installed according to the installation instructions.
- The monitor is designed for stationary installation on a plane surface, where the following conditions are fulfilled:

  no high explosive risks
  no strong magnetic fields
  no direct sunlight
  no large, sudden temperature changes

- Never allow fluids, metal filings or wiring debris to enter any openings in the monitor. This may cause fire or electrical shock.
- The monitor fulfills the requirements of EMC directive 2004/108/EC.
- Storing the monitor where the temperature is lower or higher than recommended in this manual can cause the LCD display liquid to congeal or become isotopic.
- The LCD display liquid contains a powerful irritant. In case of skin contact, wash immediately with plenty of water. In case of eye contact, hold the eye open, flush with plenty of water and get medical attention.
- The supplier is not responsible for modified, altered or reconstructed equipment.
- Use only parts and accessories manufactured according to specifications of the supplier.
- Peripheral equipment must be appropriate for the application and location.
- The figures in this manual serves an illustrative purpose. Because of the many variables associated with any particular installation, the supplier cannot assume responsibility for actual use based on the figures.
- The supplier neither guarantees that the monitor is suitable for your particular application, nor assumes responsibility for your product design, installation or operation.

1.2 During Use

– Keep the monitor clean.

– Emergency stop and other critical safety functions may never be controlled from the monitor.

– Do not use force or sharp objects on the display surface.

1.3 Service and Maintenance

– Only qualified personnel should carry out repairs.

– The agreed warranty applies.

– Before carrying out any cleaning or maintenance operations, disconnect the equipment from the electrical supply.

– Clean the display and surrounding front cover with a soft cloth and mild detergent.

1.4 Dismantling and Scrapping

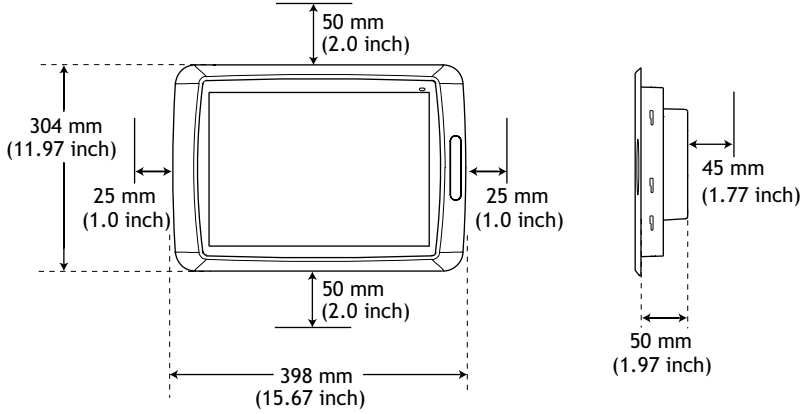
– The monitor or parts thereof shall be recycled according to local regulations.

– The following components contain substances that might be hazardous to health and the environment: electrolytic capacitor and display.

2 Installation

2.1 Space Requirements

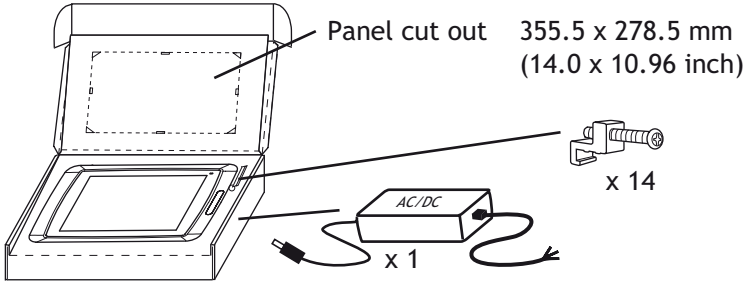
Installation plate thickness: 1.5 - 9.0 mm (0.06 - 0.35 inch)
Space requirements when installing DT150:



Caution:
The openings on the enclosure are for air convection.
Do not cover these openings.

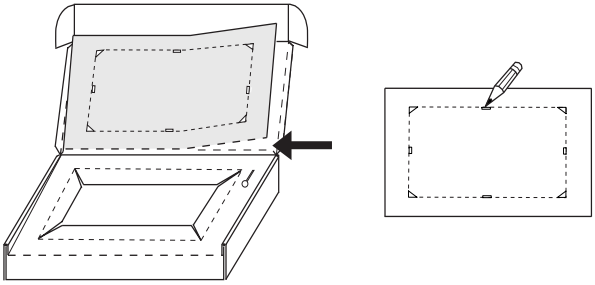
2.2 Installation Process

1. Unpack and check the delivery. If anything is damaged, notify the supplier.

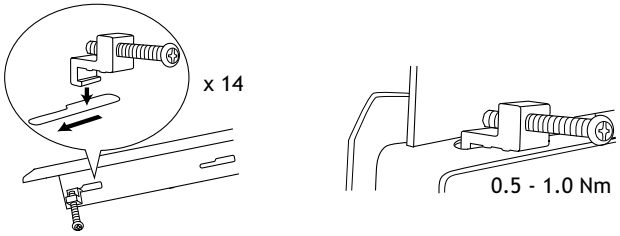


Note:
Place the monitor on a stable surface during installation. Dropping it or letting it fall may cause damage.

2. Place the panel cut out where the monitor is to be situated, draw along the outer sides of the holes and cut according to the markings.



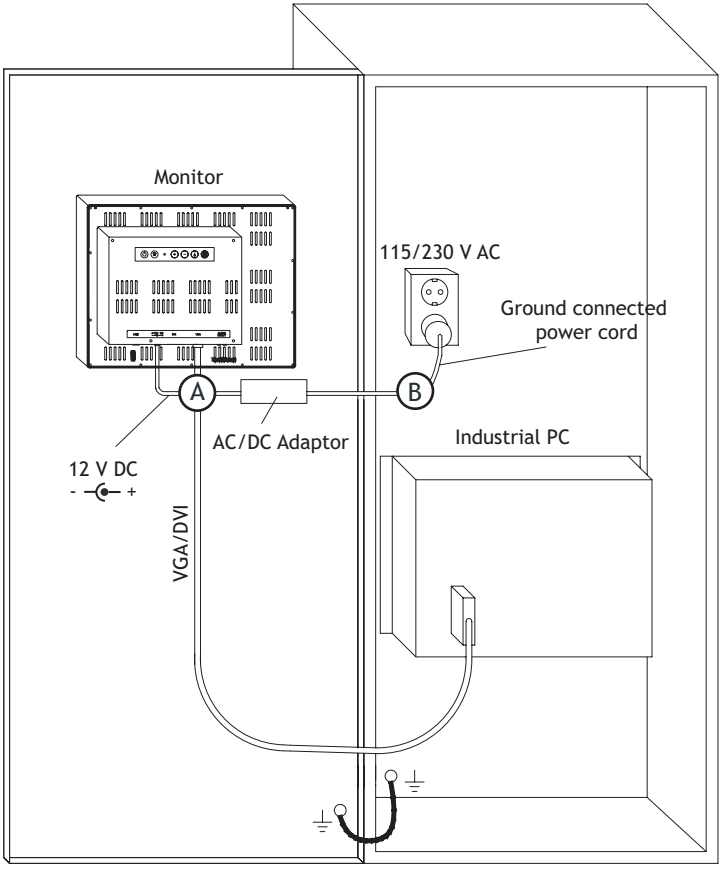
3. Secure the monitor in position, using all the fastening holes and the provided brackets and screws:



4. Connect the cables in the specified order.

Ⓐ **Caution**
Use only shielded communication cables.
Separate high voltage cables from signal and supply cables.

Ⓑ **Caution:**
The monitor must be brought to ambient temperature before it is started up. If condensation forms, ensure that the monitor is dry before connecting it to the power outlet.



5. Carefully remove the laminated film over the monitor display, to avoid static electricity that could damage the monitor.

3 Technical Data

Parameter	DT150
Front panel, W x H x D	398 x 304 x 6 mm
Mounting depth	50 mm
Front panel seal	IP 66
Rear panel seal	IP 20
Front panel material	Touch screen: Polyester on glass *, 1 million finger touch operations. Overlay: Autotex F250. Powder-coated aluminum.
Reverse side material	Powder-coated alu-zink.
Touch interface	Eely ET-RY-USB-VI, via USB. Drivers for Windows 95/98/ME/2000/XP are available.
Screen setup	Via rear membrane keyboard.
Video interface	VGA and DVI.
Weight	4 kg
Rated voltage	12 V DC ± 5%
Power consumption at rated voltage	2.25 A (27 W) max.
Display	TFT-LCD XGA. 1024 x 768 pixels, 16,7 million colors. CCFL backlight lifetime at the ambient temperature of +25 °C: >35,000 h.
Active area of display, W x H	304.1 x 228.1 mm
External power supply	Input: 100 - 240 V AC, 50/60 Hz, 1.1 A. Output: 12 V DC, 4 A, 5.5/2.5 mm female DC connector.
Ambient temperature	0 ° to +50 °C
Storage temperature	-20 ° to +70 °C
Relative humidity	5 - 85% non-condensed
CE	The monitor conforms with the essential protection requirements of the directive 2004/108/EC. Noise tested according to EN61000-6-3 emission and EN61000-6-2 immunity.

* See section *4 Chemical Resistance*

3.1 The On Screen Display Menu

The On Screen Display (OSD) menu makes it easy to adjust monitor settings.

The buttons for accessing the OSD menu are located on the rear side of the monitor. Some of the OSD buttons have multiple functions (a hot key option), listed below.

Usually, the display is configured by the automatic display configuration when pressing the **Down Arrow** button.

If advanced configuration is needed, the **Menu** button displays other options. The - and + buttons are used for navigation, and the **Menu** button is used to select.

The OSD buttons and their function are described below:

Button	Function	Alternative function
Menu	Opens the OSD menu and works as **Select** and **Deselect** button.	-
Down Arrow	**Return** or **Exit** in the OSD menu.	Automatic display configuration
-	Decrease/left key	Audio decrease
+	Increase/right key	Audio increase
VGA/DVI	Source select (VGA or DVI)	-
Power	Turns on/off the monitor.	-

3.1.1 On Screen Menu Descriptions

This section describes the accessible sub menus and their functions.

Note:
The menus **Picture** and **Function** are not accessible in DVI-mode.

Main Menu	Sub Menu	Function
Color	Contrast	Adjust contrast. (Analog RGB only)
	Brightness	Adjust screen brightness
	Gamma	RGB gain option
	Color Temp	**User:** Red, green and blue colors can be adjusted **Warm:** Red-tinged screen **Normal:** Green-tinged screen **Cool:** Blue-tinged screen
	Color Adjust	If **User** is selected under **Color Temp**, the colors can be adjusted individually
	Exit	Exit to main menu

Main Menu	Sub Menu	Function
Picture	H.Position	Move screen horizontally
	V.Position	Move screen vertically
	Phase	Used to adjust the phase of the screen when noise or overlapped lines are shown on the screen
	Clock	Adjust horizontal size of the screen by increasing or decreasing the number of picture elements
	Sharpness	Adjust sharpness of pictures in 5 levels
	Exit	Exit to main menu

Main Menu	Sub Menu	Function
Function	Auto Adjust	Auto configuration of geometry. **Clock** and **Phase** are adjusted and position is centered
	Auto Color	Automatic color adjustment
	Exit	Exit to main menu

Main Menu	Sub Menu	Function
OSD Menu	Language	Select the language of OSD Menu: English/French/German/Spanish/Italian/Danish
	OSD H.Pos	Adjust horizontal position of OSD Menu by value
	OSD V.Pos	Adjust vertical position of OSD Menu by value
	OSD Timer	Set the duration time of the OSD Menu (OSD turn-off time)
	Translucent	Set OSD Menu to translucent or opaque
	Exit	Exit to main menu

Main Menu	Sub Menu	Function
Misc.	Signal Source	Select input signal source Analog RGB/DVI
	Mode Select	Select DOS 640 (graphic) or DOS 720 (text) input mode
	Reset	Initial set up (factory setting)
	Volume	Adjust volume
	Exit	Exit to main menu

3.2 Operation Messages

The following operation messages will be displayed under different circumstances:

Operation message	Explanation
AUTO TRACKING	Auto Tracking (analog RGB mode): Executes auto function
NO SIGNAL	Self diagnostics (analog RGB mode): No input signal after power-on with power switch. The message will disappear after 10 seconds of activity of input signal.
NO SUPPORT	Out of Range: The input signal exceeds the supported range.

3.3 Video Input Timing

The following vertical refresh rate is recommended:

Mode	Refresh rate
1024 x 768 pixels	60~75 Hz
Sync.: H/V separated TTL	

3.4 Audio Support

The industrial monitor has a built in stereo amplifier that can be controlled either via the OSD interface or the OSD buttons on the rear side. The monitor is equipped with one audio input port and one speaker out port.

Parameter	Specification
Maximum output	2 x 2W @ 8 Ω

Note:
The industrial monitor does not include built-in speakers.

3.5 Calibrate the Touch Screen

The industrial monitor has a built in touch screen. This is not operational when shipped from the supplier and must be installed. Instructions and drivers for installation of the touch screen function are available at:
www.hmi.beijerelectronics.com

4 Chemical Resistance

4.1 Metal Casing

The frame and casing material is powder-coated aluminum. This powder paint withstands exposure of up to 24 hours duration to the following chemicals without visible change:

Ammonia 25%	Isopropyl alcohol	Nitric acid 3%
De-ionized water	Tap water	Chlorhydric acid 10%
Butanol	Cooling liquid 50%	Washer fluid 33%
Citric acid 10%	Ligroin	Sulfuric acid 20%
Diesel	Cooking oil	Turpentine
Ethanol 99.5% denaturalized	Lactic acid 10%	Urea saturated
FAM-Normal petrol	Sodium di-chromate saturated	Hydro peroxide 3%
Alcohol 95%	Caustic soda 5%	Acetic acid 10%
Phosphoric acid 43%	Sodium hypo chlorite solution	Alu-cleaner
Glycol	Sodium carbonate 10%	-
Industrial petrol	Sodium chloride 20%	-

4.2 Touch Screen and Overlay

4.2.1 Autotex F250

Autotex F250 covers the overlay surrounding the touch screen.

Solvent Resistance

Autotex F250 withstands exposure of more than 24 hours duration under DIN 42 115 Part 2 to the following chemicals without visible change:

Potassium ferrocyanide/ ferricyanide	Sodium hypchlorite <20% (bleach)	1.1.1. Trichloroethane (Genklene)
Cyclohexanol	Acetaldehyde	Ethylacetate
Diacetone alcohol	Aliphatic hydrocarbons	Diethyl ether
Glycol	Toluene	N-Butyl acetate
Isopropanol	Xylene	Amylacetate
Glycerine	White spirit	Butycellosolve
Methanol	Fromic acid <50%	Ether
Triacetin	Acetic acid <50%	MIBK
Dowanol DRM/PM	Phosphoric acid <30%	Cutting oil
Acetone	Hydrochloric acid <36%	Potassium carbonate
Metyl ethyl ketone	Nitric acid <10%	Washing powders
Dioxan	Trichloracetic acid <50%	Fabric conditioner
Cyclohexanone	Sulphuric acid <10%	Ferric chloride
Ethanol	Formaldehyde 37% - 42%	Ferrous chlorid
Isophorone	Potassium hydroxide <30%	Dibutyl Phthalate
Ammonia <40%	Linseed oil	Dioctyl Phthalate
Caustic soda <40%	Paraffin oil	Sodium carbonate
Hydrogen peroxide <25%	Blown castor oil	Petrol
Alkalicarbonate	Silicone oil	Teepol
Bichromate	Turpentine substitute	Water
Diesel oil	Univeral brake fluid	Sea water
Acetonitrile	Decon	-
Sodium bisulphate	Aviation fuel	-

Autotex withstands DIN 42 115 Part 2 exposure of up to 1 hour duration to glacial acetic acid without visible change.

Autotex is not resistant to high pressure steam at over 100 °C or the following chemicals:

Concentrated mineral acids	Benzyl alcohol
Concentrated caustic solution	Mehylene chloride

Autotex withstands 24 hours exposure to the following reagents at 50 °C without visible staining:

Top Job	Grape Juice	Ariel	Ajax
Jet Dry	Milk	Persil	Vim
Gumption	Coffee	Wisk	Domestos
Fantastic	-	Lenor	Vortex
Formula 409	-	Downey	Windex

Very slight discoloration was noted under critical viewing conditions with the following materials:

Tomato juice	Tomato ketchup	Lemon juice	Mustard

Outdoor Use

In common with all polyester based films Autotex F250 is not suitable for use in conditions of long term exposure to direct sunlight.

4.2.2 Touch Screen Surface

The touch screen surface on the monitor withstands exposure to the following solvents without visible change:

Solvents	Time
Acetone	10 minutes
Isopropanol	10 minutes
Toluene	5 hours

4.2.3 Autoflex EB

It is recommended to use the Autoflex EB touch display protection film, that can be ordered from Beijer Electronics.

Solvent Resistance

Autoflex EB withstands exposure of more than 24 hours duration under DIN 42 115 Part 2 to the following chemicals without visible change:

Potassium ferrocyanide/ ferricyanide	Sodium hypchlorite <20% (bleach)	1.1.1. Trichloroethane (Genklene)
Cyclohexanol	Acetaldehyde	Ethylacetate
Diacetone alcohol	Aliphatic hydrocarbons	Diethyl ether
Glycol	Toluene	N-Butyl acetate
Isopropanol	Xylene	Amylacetate
Glycerine	White spirit	Butycellosolve
Methanol	Fromic acid <50%	Ether
Triacetin	Acetic acid <50%	MIBK
Dowanol DRM/PM	Phosphoric acid <30%	Cutting oil
Acetone	Hydrochloric acid <36%	Potassium carbonate
Metyl ethyl ketone	Nitric acid <10%	Washing powders
Dioxan	Trichloracetic acid <50%	Fabric conditioner
Cyclohexanone	Sulphuric acid <10%	Ferric chloride
Ethanol	Formaldehyde 37% - 42%	Ferrous chlorid
Isophorone	Potassium hydroxide <30%	Dibutyl Phthalate
Ammonia <40%	Linseed oil	Dioctyl Phthalate
Caustic soda <40%	Paraffin oil	Sodium carbonate
Hydrogen peroxide <25%	Blown castor oil	Petrol
Alkalicarbonate	Silicone oil	Teepol
Bichromate	Turpentine substitute	Water
Diesel oil	Univeral brake fluid	Sea water
Acetonitrile	Decon	-
Sodium bisulphate	Aviation fuel	-

Autoflex withstands DIN 42 115 Part 2 exposure of up to 1 hour duration to glacial acetic acid without visible change.

Autoflex is not resistant to high pressure steam at over 100 °C or the following chemicals:

Concentrated mineral acids	Benzyl alcohol
Concentrated caustic solution	Mehylene chloride

Autoflex withstands 24 hours exposure to the following reagents at 50 °C without visible staining:

Top Job	Grape Juice	Ariel	Ajax
Jet Dry	Milk	Persil	Vim
Gumption	Coffee	Wisk	Domestos
Fantastic	-	Lenor	Vortex
Formula 409	-	Downey	Windex

Very slight discoloration was noted under critical viewing conditions with the following materials:

Tomato juice	Tomato ketchup	Lemon juice	Mustard

Outdoor Use

In common with all polyester based films Autoflex EB is not suitable for use in conditions of long term exposure to direct sunlight.

5 Drawings

5.1 DT150 Outline